ENVIRONMENTAL ASSESSMENT

EA Number: OR-100-03-03

BLM Office: Roseburg District

Proposed Action Title: **District Outplanting Site Thinnings**

Location of Proposed Action: See attached Appendix A

Conformance with Applicable Land Use Plan:

This proposed action is subject to the following land use plan:

Name of Plan: Roseburg District Record of Decision and Resources Management Plan (RMP)
Date Approved: June 2, 1995

Name of Plan: Western Oregon Plant Genetics Plan, Edition 2.0
Date Approved: August 2000

These plans have been reviewed to determine if the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Need for Proposed Action:

The Bureau of Land Management has participated in cooperative tree improvement programs for forest trees in the Pacific Northwest since the late 1950s. The tree improvement program is designed to apply genetic principles and methods to improve tree growth and disease resistance (RMP, pg. 155). Douglas-fir genetic progeny test sites were planted between 1974 and 1986 on the Roseburg District. These sites were measured on a regular basis and the trees evaluated for desirable characteristics. The trees were originally planted at 7 ft. by 7 ft. to 9 ft. by 9 ft. spacing (540 - 890 trees per acre). Trees on the older sites have grown too large and dense to maintain tree vigor. Sites that continue to persist in an over dense condition will result in mortality to some of these trees that would jeopardize future studies. A systematic thinning is needed to maintain the experimental design and the long-range functional utility of these plantations. Although all the planned measurements have been completed and trees have been evaluated, future research options could be pursued. The government has placed considerable investment in these sites that it does not want to lose. The RMP (pg. 157) has committed the District to continue to maintain these sites and develop long-term management plans for them.

Description of Proposed Action:

These sites range in size from 10 to 14 acres. Approximately one half of the surviving trees (an average of 4800 were planted per site) in each plantation, are proposed to be thinned, in a systematic fashion. Entire alternate diagonals would be marked for cutting (i.e. every other position in each row or column). Naturally seeded trees and brush would be cut at the same time to maintain uniform spacing and equal competition among retained trees. In some cases trees

would be girdled and left standing. Specific treatment is prioritized by site (see Appendix A). The trees to be removed would be evaluated site by site. On some sites many trees are of commercial value and would be sold to a purchaser who would accomplish the work. Other sites have no commercial value at the present time. Thinning would be delayed or thinned under a service contract or other means. Since all sites are relatively flat (i.e., less than 30% slope), it is anticipated that ground-based skidding equipment would be used to remove trees from the sites. This could consist of a variety of equipment such as harvester/forwarders, farm tractors, ATV with small arch or other light tractors or excavator with cutting head. A small cable yarding system may be used if proposed by the operator.

Slash and debris created by thinning and pruning treatments would be piled and covered, and burned when soil moisture is high and weather conditions permit. An alternative fuel treatment such as lopping and scattering of slash over the site would be done, in some cases, so that no slash abatement treatment would be needed.

Affected Environment

The FSEIS describes the affected environment for this province on page 3&4-19 through 22. The Roseburg District Proposed Resource Management Plan/Environmental Impact Statement (PRMP/EIS, pp. 3-3 through 3-71) provides a detailed description of BLM administered lands on the Roseburg District. NOTE: The following analysis is for those sites that are Priority 1 and 2 (see Appendix A) unless otherwise noted.

These sites are not considered habitat for Survey and Manage Species. The *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigating Measures Standards and Guidelines* (S&G, pg. 22) does not consider the maintenance of existing facilities such as these a habitat-disturbing activity that would trigger pre-disturbance surveys for Survey and Manage Species.

The following resources that could potentially be affected by the proposed project are described as follows:

Vegetation - The affected environment consists of 15 to 25 year old Douglas-fir plantations of uniformly spaced trees typical of intensively managed sites. Since these sites were developed for genetic research they have had rather intensive site preparation. All competing brush, logs and in some cases stumps have largely been eliminated from these sites. Some sites are fenced to keep out big game animals that could damage trees. The stands are currently in an over-dense and highly competitive state. Three sites (Tom Taylor, Emerson Ridge and Burma Road) have Port Orford cedar (POC) nearby or along the haul route. POC is affected by the non-native pathogen *Phytophthora lateralis*.

No Special Status Plants were observed in the project area. None of the sites are in a soil type that qualifies as potential habitat for Kincaid's lupine. There are some localized infestations of Scotch broom, a noxious weed, in the project area confined mostly to roadsides.

Cultural Resources - Three of the sites have known archaeological sites on them; two in South River and one in Swiftwater. None of these sites have been evaluated for National Register significance. Although a majority of the outplanting sites have been inventoried for cultural resources, some have not (Table Mtn., East Deadman, Upper Days Creek, Mun's Creek, Upper Dompier Creek, Cow Creek, McComas Creek, Mad Bull, Kelly Creek, Honey Bee). All of the Priority 1 sites (see Appendix A) have documented inventories or else fall within the Coast Range Inventory Plan guidelines which allow for the reduction of the intensity of inventory or elimination of inventory altogether based on a low likelihood of resources being present.

Fisheries - Coho salmon (*Oncorhynchus kisutch*) and steelhead (*O. mykiss*) are present in all watersheds in which the thinnings would occur. Oregon Coast coho is a threatened species and Oregon Coast steelhead is a candidate species under the Endangered Species Act. Chinook salmon (*O. tshawytscha*) and Coastal cutthroat trout (*O. clarki clarki*) are also present throughout the Umpqua River system. Other non-salmonid species of concern are Pacific lamprey (*Lampetra tridentada*) and Umpqua chub (*Oregonichthys kalawatseti*), which are both listed as Bureau Sensitive (BLM, Manual 6840). In addition, the proposed activities are within Essential Fisheries Habitat (EFH).

Hydrology - Sites proposed for ground disturbing activities are located greater than 100 feet from first order streams and, except Middle Creek, outside the Riparian Reserve for all fish-bearing streams. The Middle Creek Outplanting site is located approximately 300 feet from a fish-bearing stream, and on low gradient slopes. Five outplanting sites (Lower Dompier, Mt. Gurney, Mt. Scott, Broken Back SO and Wolf Creek) proposed for ground disturbing activities are located within the transient snow zone (above 2,000')[1].

Soils - The sites are on near level ground to slopes up to 30 percent. All slopes are stable. In the older sites tractor piling was done for site preparation. This method affected up to eighty percent of the ground and left extensive compaction and associated soil productivity loss. The natural recovery of lost soil productivity has been progressing slowly. On-site erosion is virtually nonexistent.

Wildlife - This project has been reviewed for Federally listed Threatened and Endangered (T&E) species known to occur in the Roseburg District. There are no known Northern Spotted owl (*Strix occidentalis caurina*) sites within 0.25 miles (disturbance radius) of the project area. Two of the outplanting sites (Johnson Ck. and Whiskey Camp) fall within Zone 1 (0 - 35 miles) for marbled murrelets (*Brachyramphus marmoratus*) and 20 sites fall within marbled murrelet Zone 2 (35 - 50 miles; Appendix B). There is suitable unsurveyed marbled murrelet habitat within 0.25 miles of most of the outplanting sites within marbled murrelet Zones 1 and 2 (Appendix B). Two sites (Emerson Ridge and Muns Ck.) are within Zone 2 for marbled murrelets but are not within 0.25 miles of suitable unsurveyed habitat. There are no known bald eagle (*Haliaeetus leucocephalus*) nests that could be affected by disturbance above ambient

noise levels within 1.0 mile of any of the sites. Columbian white-tailed deer (*Odocoileus virginianus*) are limited in distribution to the oak-savannah woodlands typical of the lowland landscape in the Umpqua Valley and are not expected to occur within the outplanting sites. The remaining T&E species do not occur in the project area. There is a known site of the Bureau Sensitive peregrine falcon within 1.0 mile of the Wolf Creek outplanting site.

Environmental Impacts of No Action

If trees are not thinned, inter-tree competition would gradually increase resulting in mortality to some trees (natural thinning) and an overall decrease in the health and vigor of the stands. These stands would then be subject to an increased risk from insects and wildfire. Those sites where tractor piling for site preparation was done, extensive residual compaction and associated soil productivity loss would continue to slowly recover.

Environmental Impacts of the Proposed Action

1. Description of Potential Impacts

Analysis considers the direct impacts (effects caused by the action and occurring at the same place and time), indirect impacts (effects caused by the action but occurring later in time and farther removed in distance) and cumulative impacts (effects of the action when added to other past, present and reasonably foreseeable future actions) on the resource values. Mitigation of the described impacts are described on page 6.

Vegetation - The leave trees would respond to the increased growing space by retaining a larger proportion of the live crown and by increased diameter and tree volume. In the Matrix, larger trees would enhance the value of the timber product and clear wood in the first (butt) log, if pruning is also accomplished. In the late-successional reserve, larger trees would enhance mature forest characteristics.

Streams and roads are the primary agents for the spread of *Phytophthora lateralis* the pathogen for disease to Port Orford cedar. Timber hauling has the potential to spread this disease for three outplanting sites with Port Orford cedar along the haul routes or in the unit. Appendix C analyzes the cumulative impacts from commercial thinning on 1546 acres in the vicinity of this proposed action. This analysis indicates a potential 2.5% increase in the rate of spread over the baseline (no action) condition. This equates to an increase of 0.4% of the infected landbase on BLM lands within the watershed (Appendix C, pg. 5). The likelihood of infection being expanded as the result of thinning these three sites is considered much lower than the previously mentioned analysis and essentially the same as the no-action or baseline condition. This is due to the short duration of the action (an estimated 20 loaded log trucks per site at three sites); restriction of the action to the dry season of hauls when spread is minimized; and the fact that the proposed action (on approximately 30 acres) represents 1.9% of the area in the aforementioned analysis.

Logging would result in an indirect effect through the potential to spread noxious weed infestation into the proposed project area. Exposed soil is highly preferred by noxious weeds and invasive nonnative species. Noxious and invasive weed seeds are often introduced from seeds carried into the area by construction equipment.

Cultural Resources - Direct impacts to cultural resources from ground disturbance by ground-based equipment or cable systems would result in possible artifact and feature destruction and displacement unless mitigated.

Soils - An estimated three to ten percent of the ground that was not previously impacted from tractor clearing and piling for site preparation would receive compaction from ground-based yarding (a direct effect) in the moderate to heavy range (i.e., a perceptible change in soil structure or an increase of 15 percent or more in soil bulk density) to a depth of eight inches. Where there was tractor site preparation, some additional compaction in addition to the existing extensive residual compaction would occur. The amount of additional compaction would be highly variable depending on the presence and distribution of the residual compaction, slope, surface texture, moisture conditions, slash distribution, equipment selection (tire/track pressure due to machine weight) and operator technique. This assessment is based on a study by Allen (1997) and monitoring of the Sampson Butte, Coon Creek and Burma Shave commercial thinnings in the Roseburg District. It assumes about 50 feet average spacing of trails that cover approximately 25 percent of the ground. Where subsoiling would be done upon completion of the thinnings up to eighty percent of lost soil productivity would be recovered. With selective subsoiling using a small excavator, damage to the boles and roots of conifers would be within acceptable limits and debris could be pulled back over the trails. Any in-unit erosion would be small and temporary (one season). No sediment would reach streams from in-unit erosion. No landslides would occur on these gently sloping, stable sites. Negligible sediment (indirect effect from first wet season flush) would be produced that reaches streams from dry season haul, especially considering the small scope of these operations.

Hydrology - No direct or indirect effects to water quality are expected from the proposed thinning activities. The girdling, thinning or removal of the trees from these uplands would not result in any increase in runoff that would affect the adjacent stream channels, since all sites are located on slopes less than 30 percent, greater than 100 feet from any stream channel and ground-based yarding and hauling would be limited to the dry season. Any change in peak flow from those units within the transient snow zone would not be measurable above back ground levels due to the low proportion of canopy loss relative to the adjacent stream drainage basin.

Threatened and Endangered Species (aquatic) - No direct or indirect effects to fisheries habitat are expected from the proposed project. All of the sites proposed for ground disturbing activities, with the exception of Middle Creek, are located outside the Riparian Reserve of fish-bearing streams. Middle Creek is located on low gradient slopes (< 30%) and approximately 300 feet from the fish-bearing stream. McComas Creek and Wolf Creek are the only sites located within the Riparian Reserves for first order non-fish

bearing streams. Both these units are greater than 100' from the stream channel. Due to the small thinning units (10 to 14 acres), low gradient terrain, existing buffers, and ground disturbing activities proposed during the dry season, no sediment from the units is expected to reach the streams. Haul routes are proposed over well-maintained roads and during the dry season. Steam crossings on the haul routes generally occur over non-fish bearing intermittent streams. The seasonal restrictions of dry season haul, relatively low number of loads from each unit, and proposed mitigation measures would prevent generated sediment from impacting fisheries or aquatic habitat. This analysis indicates that there will be no effect on any listed fish species and the proposed project will not adversely impact EFH.

Threatened and Endangered Species (terrestrial) - There are potential direct effects to the marbled murrelet and peregrine falcon due to disturbance from logging operations within 0.25 miles of unsurveyed suitable marbled murrelet habitat and within 1.0 mile of a peregrine falcon nest site respectively. No disturbance to the spotted owl is anticipated since no activity would occur within 0.25 miles of any known spotted owl site. No currently suitable northern spotted owl, marbled murrelet, or bald eagle habitat would be altered by the project. The proposed project would not remove or significantly alter habitat or cause disturbance to the Columbia white-tailed deer. No indirect effects from this action are foreseen.

2. Critical Elements of the Human Environment

"Critical Elements of the Human Environment" is a list of elements specified in BLM Handbook H-1790-1 that must be considered in all EA's. These are elements of the human environment subject to requirements specified in statute, regulation, or executive order. These elements have been analyzed for potential effects and are as follows:

Critical Elements	Potentially Affected		
	No	Yes	
Air Quality	X		
ACEC	X		
Cultural Resources		X	See Cultural above
Environmental Justice	X		
Farmlands, Prime/Unique	X		
Floodplains	X		
Invasive and Nonnative Species		X	See Botany above
Nat. Amer. Rel. Concerns	X		
T & E Species		X	See above
Waste, Hazardous/Solid	X		
Water Quality, Drinking/Ground	X		
Wetlands/Riparian Zones	X		
Wild and Scenic Rivers	X		
Wilderness	X		

Description of Mitigation Measures and Residual Impacts:

1. **Cultural Resources** - Those sites with cultural resource values would not have trees removed from that portion containing the archaeological site. Those sites that have not yet been inventoried (see page 3) would be inventoried. Mitigation measures would be prescribed to be implemented if resources are found.

2. **Invasive and Nonnative Species** - Stipulations would be incorporated into the logging contract or permit to prevent and/or control the spread of noxious weeds. This would include the cleaning of logging equipment prior to entry on BLM lands (BLM Manual 9015 - Integrated Weed Management).

3. **T & E Species (terrestrial) -** Sites will be surveyed, as required, for T & E Species; or in the case of the marbled murrelet, assumed to be occupied and operating restrictions applied. If any T & E Species are identified on a specific site, that site will be dropped from the plan; or, if possible, the operating plan amended by the appropriate specialist(s) to maintain or improve habitat for the species in question. All seasonal and temporal operating restrictions would be followed to limit potential noise impacts on T&E wildlife. Currently for those sites within Zone 1 and within 0.25 miles of suitable unsurveyed habitat (see Appendix B), seasonal restrictions are required from April 1 - August 5 and daily operating restrictions (DOR) are required from August 6 - September 15. For those sites within Zone 2 and within 0.25 miles of suitable unsurveyed habitat (see Appendix B), DOR are required from April 1 - August 5. For the outplanting site within 1.0 mile of a known peregrine falcon nest site, seasonal restrictions from February 1 - August 15 are required. These restrictions could be changed in future Biological Opinions.

4. **T & E Species (aquatic) -** All haul routes would be inspected prior to hauling and maintained in good condition during the period of haul.

5. **Logging -** Felling and yarding would be done in a manner to protect the residual stand. No falling and yarding would be permitted from April 15 through July 15 when the sap is up in the trees and damage due to bark slippage could occur. This date could be adjusted based on local conditions (e.g. earlier or later than normal loose bark period). Ground-based equipment operation would be restricted to periods when soils are dry and confined to designated skid trails identified in an approved logging plan in order to reduce compaction. Harvester equipment would be operated on top of new slash when possible. The slash would provide a cushion for the soil thereby reducing compaction. Ameliorating compaction would be accomplished in accordance with RMP requirements. LSR sites would be subsoiled following treatment using a subsoiler attached to an arm of an excavator or in Matrix sites, deferred until final harvest. All State fire restrictions and equipment regulations would be followed to minimize risk of wildfire.

6. **Port-Orford Cedar -** All logging equipment would be steam cleaned or pressure washed prior to move-in to project sites that are at risk of infection. Yarding and hauling of timber would be restricted to the dry season (May 15 - Oct. 15) so as not to influence the spread of *P. lateralis* [2].

7. **Riparian Reserves** - Some sites may include areas of Riparian Reserve. No yarding would be allowed within 20 feet of any stream channel identified within a site to protect channel stability and prevent sediment delivery to the stream. Treatments within 20 feet of stream channels would consist of girdling or manual (noncommercial or pre-commercial) type treatments.

Cumulative Impacts:

The additions to the cumulative impacts on all resources at the fifth- field scale are inconsequential. There are no anticipated negative long-term cumulative impacts to the project area resulting from the implementation of the proposed project with the possible exception of soil productivity losses due to compaction and soil displacement from ground-based operations, past and present. The additions to long-term cumulative impacts would be dependent on the degree to which amelioration is done now or deferred. When any deferred amelioration is finally completed, soil productivity would be maintained or improved over the present condition. The cumulative effects from the potential spread of *P. lateralis* are described in Appendix C.

Agencies, Persons, and Permittees Consulted

General Public on mailing list (approximately 145 addressees) for *Roseburg District Project Planning Update* (Fall 2002)

Oregon / Washington Tribal Governments

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Completed 1/21/03

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order (BLM NEPA Handbook, Appendix 5). These resources or values are either not present or would not be affected by the proposed actions or alternatives, unless otherwise described in this EA. This negative declaration is documented below by individuals who assisted in the preparation of this analysis.

Element	Responsible Position	Initials	Date	Remarks
Air Quality	Fuels Management Specialist	KC	1/21/03	Possible localized dust and smoke within project area
Areas of Critical Environmental Concern	Environmental Specialist	JSL	1/21/03	Project is not within or near an ACEC.
Cultural Resources	Archeologist	IMB	1/22/03	See text
Environmental Justice	Environmental Specialist	JSL	1/21/03	No disproportionate use by Native Americans, minorities or low-income populations.
Farm Lands (prime or unique)	Soil Scientist	DCC	1/22/03	"No discernable effects are anticipated" (PRMP pg. 1-7)
Flood Plains	Hydrologist	DD	1/22/03	Sites are not within a flood plain.
Invasive Nonnative Species	Botanist	RSW	1/22/03	See text
Native American Religious Concerns	Environmental Specialist	JSL	1/21/03	No concerns were noted from public contact
T&E Terrestrial Species	Wildlife Biologist			No Effect
T&E Plant Species	Botanist	RSW	1/22/03	No Effect
T&E Aquatic Species	Fisheries Biologist	ACC	1/22/03	No Effect
Hazardous/Solid Wastes	Area Hazardous Materials Coordinator	LB	1/22/03	Applicable Haz Mat policies would be in effect.
Water Quality Drinking/Ground Water	Hydrologist	DD	1/22/03	No Effect

Wetlands/Riparian Zones	Hydrologist	DD	1/22/03	Sites are not within wetland or riparian areas.
Wild and Scenic Rivers	Recreation Planner	RLM	1/21/03	Project is not within a Wild and Scenic river.
Wilderness	Recreation Planner	RLM	1/21/03	Project is not within a wilderness study area.

The following items are not considered a Critical Element but have been cited by regulation or executive order as an item warranting consideration in NEPA documents:

Healthy Lands Initiative - This project would not violate the Healthy Lands Initiative. This project would be in compliance with the RMP, which has been determined to be consistent with the standards, and guidelines for healthy lands (43 CFR 4180.1) at the land use plan scale and associated time lines.

National Energy Policy - Executive Order 13212 provides that all decisions made by the Bureau of Land Management will take into consideration adverse impacts on the President's National Energy Policy. This project would not have a direct or indirect adverse impact on energy development, production, supply, and/or distribution and therefore would not adversely affect the President's National Energy Policy.

End Notes

[1] The Transient Snow Zone (TSZ) is defined as areas between 2,000 to 5,000 foot elevation that may alternately receive snow or rain. A hydrologic effect known as the Transient Snow Zone effect is the effect from a warm rain-on-melting snow event that contributes to increased peak flows due in part to openings created within the TSZ.

[2] Oregon State Office (BLM) Information Bulletin No. OR-2003-026, Nov. 27, 2002.

APPENDIX A

Outplanting Sites

SOUTH RIVER

SITE NAME	LUA	LOCATION T R Sec	BIRTH DATE	PRIORITY	COMMENTS
Lower Dompier Ck.	GFMA	30S2W 15	1979/83	1	
Tom Taylor	GFMA	29S8W 33	1979/81	2	POC along haul route
Emerson Ridge	GFMA	30S9W 1	1979/81	2	POC along haul route
Shoestring	GFMA	31S6W 6	1980/82	2	
Middle Ck.	GFMA	31S6W 29	1979/81	2	
Mt. Gurney	LSR	28S8W 3	1982	2	
Johnson Ck.	GFMA	28S3W 34	1984	3	
East Deadman	GFMA	29S2W 26	1984	3	
Coffee Ck.	GFMA	29S2W 30	1983	3	
Lower Days Ck	CONN	29S3W 23	1981	3	
Upper Days Ck.	CONN	29S3W 23	1981	3	
Ben Branch	GFMA	29S4W 15	1981	3	
Muns Ck.	GFMA	29S8W 3	1984	3	
Chimney Rock	CONN	29S8W 35	1985	3	
Upper Dompier Ck.	GFMA	30S2W 9	1985	3	
Packard Gulch	CONN	30S5W 1	1981	3	
Burma Road	GFMA	30S8W 5	1985	3	POC on site and along haul route
Sugar Pine Ridge	LSR	28S7W 7	1984	3	
Buck Rock	LSR	30S7W 21	1984	3	
Table Mt.	LSR	30S7W 29	1982	3	
Battle Creek	LSR	30S8W 19	1985	3	
Cow Ck.	LSR	31S4W 29	1984	3	

POC - Port-Orford Cedar

Priorities

Priority 1. Commercial thinning treatment (FY 2003-4).

Priority 2. Commercial thinning treatment (FY2005-10).

Priority 3. Younger sites not ready for treatment at this time.

SWIFTWATER

SITE NAME	LUA	LOCATION T	R	Sec	BIRTH DATE	PRIORITY	COMMENTS
Johnson Ck.	GFMA	21S	7W	9	1974	1	Marked 96
Hancock Ck.	GFMA	22S	7W	23	1980	1	
Yellow Ck. Jct.	GFMA	24S	6W	9	1979	1	
Tom Folly	LSR	21S	7W	25	1980/82	1	
Brokenback S.O.	LSR	23S	6W	29	1978	1	Rogued 95
Martin Ck.	LSR	23S	7W	25	1982	1	
Yellow Ck. Mt.	LSR	24S	6W	3	1974	1	Marked
Galagher Ridge	LSR	24S	6W	3	1979	1	
Mt. Scott	GFMA	25S	3W	29	1979	2	
Wolf Ck.	AMA	27S	3W	13	1979/83	2	
Cow Bench	LSR	23S	6W	29	1979	2	
Whiskey Camp	LSR	24S	8W	28	1982	2	
Broken Leg	LSR	25S	7W	27	1979	2	
Mad Bull	GFMA	23S	4W	13	1979/80	3	
Brads Ck.	GFMA	23S	7W	13	1982	3	
Hi-N-Mighty	GFMA	25S	2W	35	1986	3	
Kelly Ck.	GFMA	25S	3W	23	1983	3	
Greenman Ck.	AMA	27S	2W	5	1984	3	
Honey Bee	AMA	27S	2W	17	1983	3	
Cavitt Ck.	AMA	27S	3W	11	1984	3	
Sand Ck.	LSR	21S	5W	3	1982	3	

Priorities

Priority 1. Commercial thinning treatment (FY 2003-4).

Priority 2. Commercial thinning treatment (FY2005-10).

Priority 3. Younger sites not ready for treatment at this time.

APPENDIX B

Wildlife Concerns

For those outplanting sites within Zone 1 and within 0.25 miles of suitable unsurveyed habitat, seasonal restrictions are required from April 1 - August 5 and daily operating restrictions (DOR) are required from August 6 - September 15. For those outplanting sites within Zone 2 and within 0.25 miles of suitable unsurveyed habitat, DOR are required from April 1 - August 5. For outplanting sites within 1.0 mile of a known peregrine falcon nest site, seasonal restrictions from February 1 - August 15 are required.

Outplanting Site		**Marbled Murrelet**			**Peregrine Falcon**
Site Name	Priority	within Zone 1	within Zone 2	within 1/4 mile of suitable, unsurveyed habitat	within 1 mile of known site
Swiftwater RA					
Johnson Ck.	1	Y	-	Y	-
Hancock Ck.	1	-	Y	Y	-
Yellow Ck. Jct.	1	-	Y	Y	-
Tom Folly	1	-	Y	Y	-
Brokenback S.O.	1	-	Y	Y	-
Yellow Ck. Mtn.	1	-	Y	Y	-
Galagher Ridge	1	-	Y	Y	-
Mt. Scott	2	-	-	-	-
Wolf Ck.	2	-	-	-	Y
Cow Bench	2	-	Y	Y	-
Whiskey Camp	2	Y	-	Y	-
Broken Leg	2	-	Y	Y	-
Mad Bull	3	-	-	-	-
Brads Ck.	3	-	Y	Y	-
Hi-N-Mighty	3	-	-	-	-
Kelly Ck.	3	-	-	-	-
Greenman Ck.	3	-	-	-	-
Honey Bee	3	-	-	-	-
Cavitt Ck.	3	-	-	-	-
Sand Ck.	3	-	Y	Y	-
Martin Ck.	3	-	Y	Y	-

Outplanting Site		Marbled Murrelet			Peregrine Falcon
Site Name	Priority	within Zone 1	within Zone 2	within 1/4 mile of suitable, unsurveyed habitat	within 1 mile of known site
South River RA					
Lower Dompier Ck.	1	-	-	-	-
Tom Taylor	2	-	Y	Y	-
Emerson Ridge	2	-	Y	-	-
Middle Ck.	2	-	-	-	-
Mt. Gurney	2	-	Y	Y	-
Shoestring	2	-	-	-	-
Johnson Ck.	3	-	-	-	-
East Deadman	3	-	-	-	-
Coffee Ck.	3	-	-	-	-
Lower Days Ck.	3	-	-	-	-
Upper Days Ck.	3	-	-	-	-
Ben Branch	3	-	-	-	-
Muns Ck.	3	-	Y	-	-
Chimney Rock	3	-	Y	Y	-
Upper Dompier Ck.	3	-	-	-	-
Packard Gulch	3	-	-	-	-
Burma Road	3	-	Y	Y	-
Sugar Pine Ridge	3	-	Y	Y	-
Buck Rock	3	-	Y	Y	-
Bridge Ck.	3	-	-	-	-
Cow Ck.	3	-	-	-	-
Table Mtn.	3	-	Y	Y	-

APPENDIX C

Potential Cumulative Effects of the Spread of a Root Disease on Port Orford Cedar

November 14, 2002

Introduction and Background

Port-Orford cedar (POC) is affected by the non-native pathogen *Phytophthora lateralis* (PL). Streams and roads are the primary agents for the spread of this disease across the forest landscape. PL can kill mature POC within two to four years after exposure, and seedlings within a few weeks. Infection is highly dependent on the presence of water in the immediate vicinity of susceptible tree roots. In virtually all cases, infection of POC occurs in areas where obvious avenues for water-borne spores may exist for dispersal.

The disease is spread through transport of infested soil and water into previously disease free sites. Vehicles using existing roads in activities such as forest management, special forest products harvest, recreation, and hunting, as well as off road vehicle use, road construction, maintenance and logging operations can spread the disease through transport of infested soil. Game animals that pick up infested soil on their feet and hooves also spread the disease. Spread occurs primarily in the fall, winter, and spring when the cool, moist environmental conditions are most favorable for the pathogen. Little or no spread occurs in the hot, dry summer months. Once introduced, the pathogen is primarily spread by the flow of water. *P. lateralis* can survive in infected POC roots for up to seven years (Hansen and Hamm, 1996).

High-risk areas for infection include stream courses, drainages, or low-lying areas down slope from already-present infection centers or below roads and trails where inoculum may be introduced. There is no definitive distance along roads or streams that is considered to be at high risk. POC are not usually infected more than 40 feet downslope from roads except where streams, culverts, wet areas, or other roads are present to facilitate dispersal (Goheen, et. al. 1986). New infections below roads or in stream courses could result in further spread downslope. Spread of the disease upslope from a road depends on the steepness of the slope and the location of POC roots in relation to the road or ditchline.

A study in a landscape in southern Oregon found that just over 70% of infection sites were caused by dispersal via vehicles along roads. Infections down the creek were then more common and occurred earlier than other infections. Infections due to roads moved up to 2.4 miles. Sites with perennial creeks are more likely to be infected due to higher levels of moisture in the dry season. (Jules, et. al., in press)

Geographical Area of Analysis

The Upper Middle Fork Coquille watershed analysis unit consists of 67,207 acres and encompasses four sixth-field sub-watersheds (Upper Rock Creek, Camas Valley, Upper Middle Fork Coquille, and Twelve Mile). This is the primary area considered in the following cumulative impact analysis. An expanded area is also evaluated for possible secondary spread of the root disease, both from the Upper Middle Fork Coquille watershed analysis unit to adjacent watersheds and into the primary analysis area from adjacent areas.

Roads, and muddy vehicles using those roads, have the greatest potential for transporting the disease to adjacent watersheds. One study found that 72% of infection sites in a landscape in southern Oregon were caused by dispersal via vehicles along roads (Jules, et. al. in press). This cumulative effects analysis includes roads entering and exiting the watershed. The boundary of the analysis area was expanded to include those roads that cross from the Upper Middle Fork Coquille watershed analysis unit into adjacent watersheds and are considered probable routes for timber haul back through the Upper Middle Fork Coquille watershed analysis unit. Because those roads interact with the headwater streams of adjacent watersheds, stream courses outside the Upper Middle Fork Coquille watershed analysis unit are also included in the analysis

Within the Upper Middle Fork Coquille watershed analysis unit, POC occurs as individuals or scattered groups of trees rather than continuous stands. When only a few hosts are present, they are over twice as likely to remain uninfected as when many hosts are present (Jules, et. al., in press). There are extensive areas throughout the watershed where POC does not occur. The locations of POC were determined by extensive roadside surveys in 1996. If POC was observed on the roadside, the entire forest operations inventory unit was assumed to contain POC.

Of the 67,207 total acres in the watershed analysis unit, 25,960 acres (39 percent) are managed by the BLM. Of the BLM managed lands, 6,163 acres, or 24 percent are estimated to contain POC. There is no comprehensive inventory of POC on private lands within the analysis area.

Infested areas of POC were identified using 1994 and 1999 aerial photographs on the Roseburg District and 1997 photos on the Coos Bay District. This was supplemented by on-the-ground verification. Within the watershed, 163 acres are estimated to be infected. On the BLM lands, 79 acres or 1 percent of the POC area is infected. The average size of infection is one acre, with the largest being 12 acres. The Draft Port-Orford cedar Rangewide Assessment states that eight percent of the entire range of POC is infected.

Time Frame for Actions

An analysis of cumulative impacts must include not just immediate actions but actions that are foreseeable over a period of time. The time frame for this analysis is five years, being the reasonably foreseeable future for the planning of proposed federal actions. The proposed actions are eight commercial thinning projects. The first action would be implemented in 2003 with the rest over the following four years. For this cumulative impacts analysis, these projects are all assumed to happen in 20003.

Actions to be Analyzed

Both the no-action and proposed action alternatives, occurring within the primary analysis area, will be evaluated.

No Action

The no action alternative continues active road use by private landowners and the public but does not include any road construction, harvest, or haul of timber from BLM-administered lands. Any road associated activities, whether authorized by the BLM or privately undertaken, occurring within the watershed have the potential for

spreading the root disease. This includes road use by private landowners, permittees, and recreationists. Most private timberlands within the analysis area are being managed on a 40- to 60-year rotation and harvest on some of these lands would be anticipated during the next three years. Reciprocal rights-of-way agreements held by timber companies managing lands adjacent to BLM lands allow hauling of timber over BLM-controlled roads. In almost all instances, authorization by the BLM for use of the roads by the permittee is non-discretionary. Therefore, no estimate is made of private timber harvest or haul within the analysis area, or of private road construction or improvement in the watershed. It is assumed that harvest would occur at a similar rate as in the past and no increase in harvesting is anticipated during the next five years on private lands.

Proposed Actions
The proposed actions are defined as proceeding with discrete proposed BLM density managements or commercial thinning projects. Eight projects (Angel Hair, Golden Gate, Camas Height, Smoke Screen, Diet Coq, Taylor Made, Sherlock's Denn and Bogey Gap) are considered proposed actions for this analysis, totaling approximately 1,546 acres.

Since roads are primary avenues by which PL spreads, proposed best management practices and road management techniques would minimize the likelihood of transporting infested soil. Rocking unsurfaced roads or closing roads to use are assumed to reduce the likelihood of transport. Under the proposed action, 5.5 miles of existing dirt road would be rocked and made permanent; 11.5 miles of existing dirt road would be decommissioned to prohibit use; 0.1 miles of new road would be constructed and rocked; and 4.5 miles of temporary or semi-permanent road would be constructed, used and decommissioned following project completion.

Due to the scattered nature of POC in the watershed, one of the thinnings, Diet Coq, does not contain POC, nor is it present along the haul route. There are also individual units of Angel Hair in which POC is absent from the units and the haul route. Implementation of this project or units would have no effect on the spread of PL and no impact to POC. (Haul routes consider POC in high-risk areas within forty feet downslope or twenty feet upslope from the road.)

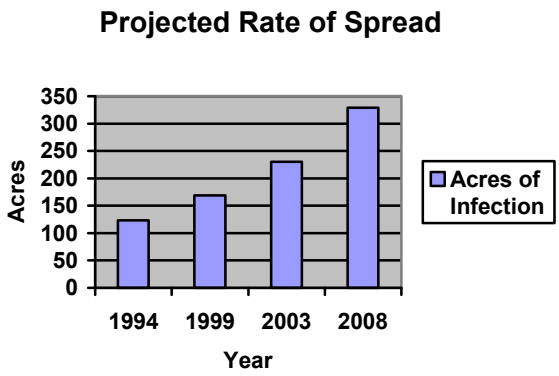
In all areas where POC is present in the proposed units or along the haul routes, the following design features would be implemented to minimize spread of PL. Road construction, renovation, harvesting, and log hauling would be restricted to the dry season. Any water used for dust abatement during road construction, renovation, or use would be treated with Clorox to kill any PL spores that might be present in the water source. All equipment would be washed and inspected prior to move-in to the contract area or prior to returning to the contract area if used elsewhere. The harvest of units would be sequenced such that infected areas would be harvested last. All POC on BLM administered lands situated along haul routes would be cut in sanitation treatments using a site-specific distance upslope and downslope from the road. All POC selected as reserve trees within the units would be spaced a minimum of 50 feet apart to eliminate the possibility of root grafts between POC trees spreading the disease.

Predicted Spread Within the Analysis Area

No Action
The best available information for predicting the rate of spread is based on aerial photo mapping of infection sites within the Roseburg District portion of the Upper Middle Fork Coquille watershed analysis unit. Infected

POC were identified using the 1994 aerial photos and by the same contractor later using the 1999 aerial photos. In both instances, aerial photo interpretation was supplemented by on-the-ground verification on BLM lands.

Identified on the 1994 photos were 92 acres of infection for all ownerships within the Roseburg District portion of the watershed analysis unit. The 1999 photos showed 132 acres of infection for a 43 percent increase of infected acreage over the five-year period (8.5 percent per year). There was only one unit (44 acres) harvested on BLM lands in the watershed during this time period, therefore this rate of spread is indicative of the no-action alternative. This annual rate of spread was projected on to the Coos Bay BLM and private infected acreage to estimate the extent of future infections for the entire analysis unit.



For BLM lands, with this projected rate of spread, there would be 164 acres of infection in 2008. This equates to 2.7% of the POC on BLM lands.

The majority of the increase in acres of infection from 1994 to 99 was associated with already existing infected areas. These areas spread downhill or along a road. A lesser percentage was new outbreaks not associated with existing infection. These were transported via roads or streams to new locations. The average size for new infections was approximately one-half acre. The longest distance that infection moved over the five-year period was 1.3 miles. If this long distance spread were to continue, the PL would move to adjacent watersheds from the Upper Middle Fork Coquille watershed analysis unit and vice versa via roads. Adjacent watersheds are already infected, so transport would not be to uninfected watersheds.

On BLM lands within the watershed, 1,036 acres of POC are located in high risk areas within forty feet of roads or streams. This is 17 percent of the BLM POC area. This means that 83 percent of the POC on BLM lands is at a low risk of infection and likely to survive.

Proposed Actions

The mitigation techniques previously mentioned would be utilized on all proposed actions. These include operations restricted to the dry season, using Clorox treated water for roadwork, equipment washing, the sequence of harvest units, haul route sanitation, and isolating POC trees within the thinning units. Unsurfaced roads would be rocked or closed to traffic following the proposed actions. This should decrease the amount of inoculum picked up on muddy roads within the watershed. The problem is that there are no quantitative measures of the effectiveness of these mitigation techniques. Based on the biology of the pathogen, the combination of mitigation techniques should minimize the spread of PL and impact to the POC population in the watershed.

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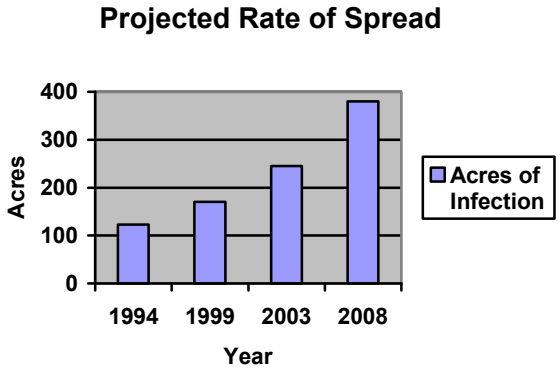
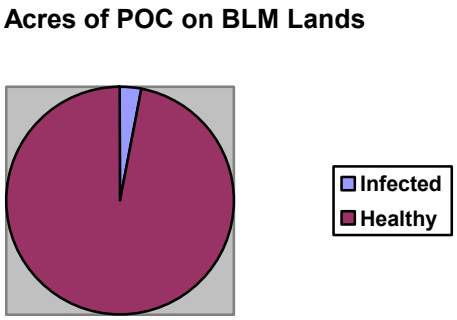
A case study on operational-type vehicle washing showed that the amount of PL on vehicles was substantially reduced through washing. Much higher percentages of POC seedlings exposed to water from the first washings were infected by the pathogen than seedlings exposed to the second washes indicated that most inoculum containing soil was removed with the first washing (Goheen, et. al., 2000).

With most spread being related to vehicle traffic, the proposed actions will increase road use in the specific sale areas due to timber haul and associated traffic. Assuming a thirty percent increase in road use due to the proposed actions, the likelihood of spread is increased due to increased vehicle traffic on the roads. Assuming a worst case that mitigation methods were ineffective, and that a thirty percent increase in road use corresponds to a thirty percent increase in spread, the rate of spread could go from 8.5 percent per year to 11 percent per year.





This projected rate is applied over the entire watershed. This overestimates the amount of spread in the watershed since the increase in road use is only on specific roads and not the entire watershed. All other roads would remain at baseline levels indicated in the no action. For BLM lands, with this projected rate of spread, there would be 189 acres of infection in 2008. This equates to 3.1% of the POC on BLM lands or an increase of 0.4% over the no action.

No spread will occur from the analysis unit to adjacent watersheds due to the proposed actions. All timber harvest units and haul routes occur totally within the Upper Middle Fork Coquille watershed analysis unit. Infections would occur in the high-risk areas and 83% of the POC on BLM lands is outside of these areas.

Regardless of the BLM proposed actions, the spread of PL will continue in the analysis area. Mitigation measures should limit the spread of the disease. Even with assuming that some mitigation would be ineffective, the difference between the proposed action and no action is minimal.

References

Goheen, D.J., K. Marshall, E. Hansen, F. Betlejewski. 2000. Effectiveness of Vehicle Washing in Decreasing Transport of *Phytophthora lateralis* Inoculum: A Case Study, Southwest Oregon Forest Insect and Disease Service Center, SWOFIDSC-00-2. 7pp.

Goheen, E.M., D.F. Cobb, and K. Forry. 1986 Roadside surveys for Port-Orford-cedar root disease on the Powers Ranger District, Siskiyou National Forest. Unpublished report. USDA Forest Service, Forest Pest Management, Pacific Northwest Region. 19 p.

Hansen, E.M. and P.B. Hamm. 1996. Survival of *Phytophthora lateralis* in infected roots of Port-Orford-cedar. Plant Disease 80:1075-1078.

Jules, E.S., M.J. Kauffman, W.D. Ritts, and A.L. Carroll. (in press – *Ecology*) Spread of an Invasive Pathogen over a Variable Landscape: A Non-Native Root Rot on Port-Orford Cedar.